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ABSTRACT

The literature on curriculum comprises three areas. The first is made up of the articles that advocate, describe, criticize, discuss, or pontificate. These articles contain little by way of discerning theoretical analysis and nothing by way of persuasive empirical evidence and are not considered here, though their influence on actual school practice may well exceed that of the materials that are covered. The second area deals with the problem of analysis, the problem of developing a body of curriculum theory that will help in the understanding of curriculum policy as well as the development of evaluation of curriculum practices. The third area of the literature seeks, through a wide variety of empirical studies, to provide data regarding the consequences of various curriculum choices. The latter two groups are discussed here under the headings of curriculum theory and analysis, curriculum structure, subject-area curriculum research, curriculum and teaching method, noncognitive outcomes in curriculum, and curriculum research and curriculum decisions. The fundamental question is still that of purpose. Curriculum researchers can no more remain indifferent to the value questions implicit in choices of objectives than can any other group of scientists. (Author/IRT)

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Recent Research in Curriculum

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The Literature on Curriculum

Three types of literature dealing with curriculum are prevalent today. First, there is what might be called the rhetoric, the articles that advocate, describe, criticize, discuss or pontificate. For the most part, these writings make only a limited contribution to our understanding of curriculum issues. They usually are well-intended, but they contain little by way of discerning theoretical analysis and nothing by way of persuasive empirical evidence. Yet this part of our curriculum literature is of significance to the profession. Studies by Cogan (1975) and Reys and Yeager (1974) make it clear that practicing teachers most often read journals that present general, non-technical discussions about curriculum and methodology; they seldom read the research studies. Although this part of the curriculum literature will not be examined in the present report, its influence on actual school practice very well may exceed that of the material we will discuss. Further, it raises some questions about the best means of interfacing research and practice; clearly the research continues to pass right by most classroom teachers.

A second area of literature deals with the problem of analysis, the problem of developing a body of curriculum theory that will help in the understanding of curriculum policy as well as the development and evaluation of curriculum practices. Broadly speaking, this literature is based on two different types of inquiry. One is essentially philosophical in nature, probing into the nature of curriculum, the values underlying curriculum choices, and the effect of the social context. A second type of curriculum literature is derived from the field of systems analysis with its attention directed to the matter of specifying objectives, input, output, and accountability.

Finally, a third area of literature seeks, through a wide variety of empirical studies, to provide data regarding the consequences of various curriculum choices.

This paper will review selected publications in each of these last two areas -- the areas of analytical and empirical studies.

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Curriculum Theory and Analysis

One type of analysis seeks to explain curriculum decisions in terms of social purpose. For example, both Apple (1975) and Franklin (1975) saw curriculum used as an instrument of social control. Whether viewed historically or in terms of contemporary practice, they argue, most of the significant formulations of curriculum are derived from the "factory model" for schools. Emphasis is on order, stability, uniformity, manipulation, and conservation of the prevailing social order. Given this perspective, several conclusions follow. Curriculum is planned for the learner, not by the learner. Knowledge is treated as something a person "gets" rather than as a disposition to select and use appropriate intellectual processes. And assessment of curriculum effectiveness takes on the characteristics of quality control techniques usually associated with industrial production.

This interpretation also emphasizes the importance of "the hidden curriculum." Czajhowski and King (1975) directed attention to the matter. "To control what children see and feel and value is to influence strongly what they become as individuals and as a society." Apple (1975) suggested that the hidden curriculum may be more significant than the overt curriculum. Important as this possibility may be, the author found no research studies designed to investigate it. To a large extent, the hidden curriculum remains hidden from the researchers.

Hurkemeyer (1974) formulated much the same concern, pointing out that the curriculum specialist faces a major difficulty when he converts curriculum building into a pseudo-science based on behavioral objectives and similar technological concepts. Such an approach contraverts many of our values which emphasize freedom of choice and personal autonomy.

There are, of course, curriculum proposals that appear to place the learner at the very center of the process, responding to his purposes and his objectives. As we shall see when these are examined later in this paper, their very lack of structure creates formidable problems for those who would assess the outcomes.

Eisner and Vallance (1974) came at the whole matter from quite a different direction. They proposed that the concept of curriculum can be examined from five different orientations: (1) curriculum as the development of cognitive processes, principally directed at improving intellectual operations, (2) curriculum as technology, primarily concerned with establishing objectives and finding efficient means to accomplish them, (3) curriculum as self-actualization, formulating goals in "dynamic personal process terms" (p. 9), (4) curriculum for social reconstruction, emphasizing societal needs over individual needs, and (5) curriculum as academic rationalism, enabling youth to comprehend and participate in his cultural and intellectual traditions. As Eisner and Vallance demonstrated by analyzing Man: A Course of Study (pp. 193-200), most major curriculum proposals embody more than one of the five perspectives indicated. Interestingly enough, the empirical research on curriculum sometimes does this implicitly, but almost never are these perspectives treated explicitly. Nor does even Eisner's analysis foreshadow the controversy that now envelops Man: A Course of Study, which will be considered again in the closing section of this paper.

Curriculum Structure

The review of curriculum done last year by Tobias and Beilin (1974) appeared to confirm that much of the attention given to curriculum structure is based on the conception of curriculum as technology. This pattern continues. Lowther (1975) was concerned with rigorous definitions of technical terms. Ost (1975) saw a trend toward interdisciplinary curriculum patterns, and offered a vocabulary to distinguish among the various patterns. Cabeceiras (1974) proposed a performance criteria matrix relating purpose, process, and product into a "paradigm that can objectively scrutinize the curriculum as a mosaic where-

in the function of each piece can be examined as an entity and all the pieces viewed as a whole." (p. 35) Posner (1974) considered curriculum to be a "structured series of intended learning outcomes." He proposed a set of constructs such as continuity, sequence, progression, spiralling, etc., as the elements for describing the general structure of a curriculum and organized these into a structural format which might serve as the independent variable for certain curriculum research designs.

Many of the models for curriculum evaluation flow from this same view of curriculum as a technological enterprise. Johnson (1974), Miller (1974), and Uprichard (1975) each, in one form or another, suggested considerations and designs for evaluating curricula which require careful identification of objectives, processes, and outcomes. Macy (1975) contrasted the significance of process and product evaluation, and proposed a model for shifting from the former to the latter at the point when optimal implementation of the new curriculum has been achieved.

Complex as these formulations may seem, Case (1975) has suggested that they may not be adequate as instruments for structuring or assessing a curriculum. He pointed out that the curriculum design must involve more than indicating the skill or concept to be learned and then analyzing the components that must be considered as a curriculum is planned to accomplish the intended outcome. The developmental capacities of the learner also are significant. Case contented that these contribute to the learnings ultimately realized and must be considered as factors quite distinct from the deliberate curriculum, but related to its ultimate effectiveness.

Subject-area Curriculum Research

Early last year Walker and Schaffarzick (1974) summarized twenty-six studies assessing the effectiveness of various innovative curricula proposals and projects. They concluded that "students using different curricula in the same subject generally exhibited different patterns of test performance, and these patterns generally reflected the differences of content inclusion and emphasis in the curricula." (p. 83) Nothing has appeared in the curriculum research literature to call into question that conclusion. Pupils continue to learn best that which the curriculum they are studying seeks to teach them, and to learn less well those matters that are not the major concerns of the curriculum they are studying.

Research in this area can be divided into two categories: (1) studies examining how well innovative educational outcomes were realized with innovative or traditional curricula, (2) studies examining how well traditional outcomes were realized with innovative or traditional curricula.

A variety of studies representatives of the first category appear in the literature. Linn and Thier (1975) examined the development of logical thinking in children who studied SCIS materials requiring formulation of the relationship between two variables, and concluded that the study of the SCIS materials did enhance pupil understanding of the logical relationships between compensating variables. Wideen's study (1975) of the AAAS science curriculum indicated that pupils using this curriculum, when compared to pupils following a traditional curriculum, score higher in standard science achievement tests, and show a better understanding of scientific process. However, the study revealed no differences with respect to attitudes toward science or toward the learning environment. Cognitive outcomes were affected positively; affective outcomes were not influenced.

Often the intended outcomes include "process skill." For example, Wood and McCurdy (1974) reported on the Nebraska Physical Science Project, a two-year course in chemistry and physics for high schools consisting of 80 individualized learning packages. Their data indicated that the high achieving students develop a range of self-directed strategies for science study, but lower achieving students do not. Tamir (1975) and Tamir and Jungwirth (1975)

completed a very elaborate study of BSCS materials used in Israel. The groups using BSCS materials obtained higher achievement scores and were clearly superior in developing inquiry skills and solving open-ended problems. Responding to the attacks on Man: A Course of Study, Dow (1975) summarized research studies showing that this curriculum developed open-mindedness, persistence, critical thinking, ingenuity, and positive attitudes toward learning.

Despite the suggestions that schools have minimal impact on learners, these studies indicate that curriculum does make a difference. It is evident that curriculum designers can develop materials and instructional procedures which strengthen the likelihood of accomplishing pre-selected objectives.

As we noted earlier, many innovative curriculum proposals also are concerned with the accomplishment of traditional objectives, usually associated with conventional indicators of academic achievement.

Garigliano (1975) has added one more study to the array of studies about the "new mathematics." He concluded that fourth graders studying the new math computed as accurately, but more slowly, than those in traditional programs, and proposed that some of the alleged learning deficiencies attributed to innovative mathematics curricula actually are artifacts of the mechanics of test taking. California has launched a massive effort in Early Childhood Education emphasizing individualization of instruction and interaction with community interests. Riles (1975) has reported preliminary results indicating that pupil gains in arithmetic and reading achievement scores exceeded expectations. Open-concept schools also are increasingly an object of study. Sanders and Wren (1975) summarized six comparative studies and concluded that pupils in open concept schools do at least as well as those in traditional schools with respect to cognitive achievement. Schnee and Parks (1975) reported that reading scores were significantly improved in open classrooms, but arithmetic scores were not. Seemingly, the field of curriculum development continues to struggle with a certain ambivalence concerning desired outcomes. Many of the innovative curriculum efforts are undertaken because non-traditional outcomes are judged important, yet the research efforts persistently include studies designed to examine the impact of these curriculum patterns on traditional outcomes. To the extent that the outcomes are intended, it is reasonable to carry out comparative studies. When the outcomes are intended by one curriculum, but not by another, comparisons ought to be qualified to emphasize that fact.

Curriculum and Teaching Method

It is generally agreed that any specific curriculum proposal calls for a particular teaching methodology. In some instances, such proposals are accompanied by massive programs to retrain teachers in the new methodology. At times, however, curriculum documents are generated or adopted by educational agencies without the resources for extensive in-service education of teachers. Orgren and Doran (1975) investigated the impact of the New York State Regents Earth Science Syllabus on teaching method. They found that, upon adoption of the new syllabus, teaching methodology shifted in the predicted direction. However, their data suggested that, in the case of teachers who change only when the new syllabus in mandated, even though the teaching method changes, the results in student achievement are minimal.

Tamir (1975) also examined the teacher's "curricular bias." He reported that students studying under teachers who were favorable to the BSCS philosophy developed a higher level of preference for critical questioning and applications, and a lower preference for recall, regardless of whether the teacher actually used the BSCS curriculum.

Thus it appears that the interaction between the methodological characteristics of a particular curriculum and the curricular bias of the teacher is an important aspect of the

effectiveness of any curriculum. Those who seek to present "teacher proof" curriculum packages quite clearly are facing a difficult problem.

Non-cognitive Outcomes in Curriculum

The heavy concentration on the structure of discipline and the achievement of competence in the discipline, which characterized the curriculum projects of the post-Sputnik era, seem increasingly a thing of the past. Cognitive curriculum outcomes more and more must share, or even yield, the balance of interest. Learner-centered, experience-based curriculum proposals are appearing. As we pointed out earlier in this paper, these curriculum proposals often lack structure in the conventional sense, the objectives are not always sharply defined, they rely on a certain emergent, spontaneous quality that responds to the developmental progress of the learner. As Stodolsky (1975) emphasized recently, this creates some tension between attempts to measure behavior under standard conditions in order to provide comparative data and the need to recognize the developmental characteristics of each individual, an approach very dependent upon case study techniques which yield quite a different type of data.

The situation varies widely with the curriculum under consideration, and sometimes the research findings hold promise. For example, Loman and others (1975) reported on experiences with the USMES curriculum (Unified Science and Mathematics for Elementary Schools). Solving "real problems," identified by the learners, utilizing flexible, integrative skills, and culminating in implementation of the solution characterize the USMES approach. The investigators report that substantial time can be spent on these problem-centered activities "with no loss in the rate of learning the standard school subjects." (p.57) More importantly, the investigators reported significant differences in the quality and effectiveness of problem-solving skills, applied in certain realistic problem situations. Such differences did not appear uniformly, but favored the USMES group when they did occur. Espejo and others (1975) evaluated a child-centered science curriculum using the intellectual models of Piaget and Guilford, and concluded that "an activity-centered curriculum, where experiences were designed to match the cognitive structures of children in these stages of development, promote the development of intellectual factors which enable them to move to the concrete-operational stage." (p. 153)

Other curriculum proposals are emerging which place greater and greater emphasis on learning by doing. The most important may be the so-called "action-learning" model now advocated by the National Association of Secondary School Principals. To my reading, the approach described by Deutschander (1974) has not yet clarified what "learning" is to occur, who is to define it, and who will judge if it happened at all. As is true with many of the pleas for a humanistic curriculum, we may have one more case of a group knowing what they oppose much more clearly than knowing what they support. It seems quite evident that skilled and sustained efforts at formative evaluation will be desirable as this type of curriculum is implemented.

In spite of the considerable volume of writing in the broad field of values education, the writer found only one study dealing with this, and that experiment was done in Canada. Sullivan and Beck (1975) developed minicourses in ethics, one for elementary school children and one for high school pupils. Each was designed in the context of the Kohlberg hierarchy of value orientation and was intended to facilitate the movement of the learner to the next higher stage. Positive results were achieved with the elementary school experiment, but results were less conclusive at the high school level. Curiously, while the control and experimental groups were at the same stage at the close of the experimental instruction, a post-test given some time later showed a significant move to a higher stage in favor of the experimental group. This suggests the need for time to permit students to internalize their learning experiences that require reflection and decisions about values. This single study promises little, but does offer some evidence to support

the possibility of designing learning situations that will extend the values thinking of students toward the higher stages.

Curriculum Research and Curriculum Decisions

During the past several years, much of the impetus for curriculum research and evaluation came from those supporting the development of new curricula who wanted to know how well they actually worked, or from potential adopters who wanted to know much the same thing. All of this suggested a rational view of curriculum development, evaluation, and adoption or rejection, and an orderly process of decision-making.

In the past year, a major debate over a major curriculum, Man: A Course of Study, has erupted. It has spilled into the Congress and has had an impact on federal funding for a wide range of curriculum activities.

Although somewhat alarming, it is also instructive to examine what the opponents are saying. While Dow (1975a, 1975b) has presented his well-documented discussion of the history, nature, purposes, and effects of MACOS, the opposition has different concerns. Council for Basic Education spokesman, George Weber (1975) concedes that the course content "is technically brilliant" and the level of scholarship high. Yet he finds the events and topics treated in the course shocking. Congressman Conlan (1975) contends that the course, by stressing other cultures and other social organizations, gives a dishonest view of man and questions our basic moral structure. Of course, there are several peripheral issues of cost, of the federal presence, of a "take over" by the big curriculum developers, etc. But the heart of the dispute lies in disagreement about the purposes and the method, not because the course failed to get the results sought.

Thus we are brought full circle to the points emphasized at the start of this paper, namely, that the fundamental questions are the questions of purpose. Curriculum researchers can no more remain indifferent to the value questions implicit in choices of objectives than can any other group of scientists. Yet so often the research studies seem almost antiseptically neutral about these very matters.

Whether another posture in curriculum research could have anticipated and met the controversy now surrounding MACOS is an open question. But it is a question to consider.

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